REVIEW

Resilience in cancer care : What should nurses do?

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Abstract : Cancer is a serious threat to human health worldwide. Attention to the quality of life (QoL) of cancer patients is increasingly recognized as an important component of and a fundamental task in cancer care. Recent studies illustrate that resilience is a key biological factor affecting cancer patients' health status and QoL. However, few studies have focused on resilience during medical procedures of cancer patients from the perspective of nursing. In this study, we summarize recent literature exploring the clinical significance of resilience in oncology nursing, propose strategies for cancer care to improve the QoL of patients through interventions on resilience, and focus on emerging theories in oncology nursing. In summary, this will emphasize the importance of resilience in oncology nursing and benefit the clinical practices that improve patients' QoL and reduce the social burden caused by cancer. J. Med. Invest. 70 : 1-6, February, 2023

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INTRODUCTION

With more than 19 million new cancer cases worldwide in 2020 (1), oncological diseases are increasingly becoming a serious threat to human health worldwide. However, improvements in medical technology and the introduction of multidisciplinary treatments have prolonged the survival time of many cancer patients. Alternatively, physical, psychological, and social stresses due to a cancer diagnosis and treatment have caused severe suffering to patients and increased the burden on their caregivers and society (2). This has prompted research aimed at helping "survivors" fight the long-term battle with cancer and re-integrate into society (3). Currently, improving the quality of life (QoL) of cancer patients is recognized as a fundamental aim during cancer care (4).

Resilience refers to the ability of individuals to preserve or regain relatively steady mental and physical functioning in the face of difficult life events and adversities (5). Given that a cancer diagnosis represents significant adversity, resilience has attracted increasing attention in the field of cancer research (5, 6). The number of studies investigating cancer patients' resilience has increased significantly in recent years, revealing that resilience is an important concept in maintaining the psychological well-being of cancer patients and that improving resilience is important for improving the QoL of cancer patients (5, 7).

Few studies have analyzed resilience from the perspective of oncology nursing. Specifically, questions such as : what is the value of and need for resilience among cancer patients in cancer care ; what are the care strategies to improve cancer patients' resilience ; what kind of attention is required to improve the resilience of older cancer patients and caregivers ; and how will the new concepts of oncology nursing models derived from COVID-19 learnings lead to future development? Based on the above questions, we conducted a review of recent literature. Depending on the clinical significance and factors influencing resilience, we explored how oncology nursing should focus on resilience and positively affect the QoL of cancer patients. This will enrich the concept of psychological nursing care in cancer and ultimately provide practical guidance to improve the value of clinical nursing.

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RESILIENCE EVALUATION IN CANCER CARE

From a postmodern and multidisciplinary perspective, resilience is the force that propels a person to cope with challenges and grow in the face of adversity and disruption (8) ; in cancer research, resilience is an important topic. The diagnosis of cancer poses a high-risk for psychological damage. Resilience may protect against such damage by mitigating or absorbing the impact of the shock of a cancer diagnosis and accompanying aversive events, thereby improving patients' psychological well-being and treatment outcomes (5, 9). There is still no universally accepted definition of resilience since resilience can refer to preexisting personality traits, dynamic processes of adaptation, psychosocial outcomes, or a combination of all three. Moreover, it can be conceptualized in different ways and contexts (6). Nevertheless, there exist well-designed scales to assess the level of resilience, and, in Table, we summarize a few of the most recent studies that describe approaches to the assessment of cancer resilience (7, 10-19). Consistent with previous research (20), the most widely used scale is the Connor-Davidson Resilience Scale 25 (CD-RISC25). Developed by Connor (21), the CD-RISC25 comprises 25 items that quantify the psychological resilience of a population, with higher scores indicating higher psychological resilience ; a simplified version with 10 items (CD-RISC10) is also available. Similar to the CD-RISC25, the Resilience Scale by Wagnild and Young is also used to measure the resilience in a population (22). A review by Windle *et al*. (20) analyzed the psychometric properties of 15 resilience measurement methods, of which the CD-RISC25, the Resilience Scale for Adults, and the Brief Resilience Scale received the highest ratings. However, the authors concluded that the psychometric quality of these scales is moderate and that there is currently no "gold standard" for assessing resilience. In a study of 228 cancer patients, Tan *et al*. concluded that resilience is a complex multi-component item

and that more than one-third of the variance in the CD-RISC25 remains unexplained in the cancer background. By identifying these unexplored factors of resilience, the existing resilience measurement method can be further improved (6). Recently, Ye *et al*. developed a 25-item resilience scale specific to cancer patients (RS-SC-25) and a shorter version with 10 items that can help nurses, physicians, and social workers assess patients' resilience levels. The RS-SCs are more sensitive to the state of deteriorating resilience in cancer patients and are expected to be useful in future resilience-based intervention trials (23). Therefore, how to precisely define and evaluate resilience in cancer patients is an important research topic.

CLINICAL IMPLICATIONS OF RESILIENCE IN ONCOLOGY NURSING

Cancer is a life-threatening disease, and patients may experience the dread of death and concern about the future after receiving a cancer diagnosis. Simultaneously, cancer patients receiving highly invasive therapies like surgery and chemotherapy suffer from long-term physical difficulties because of surgical complications and medication side-effects, which has a detrimental influence on their mental health. Consequently, the prevalence rate of anxiety and depression in cancer patients is higher than that in ordinary people, resulting in decreased adherence to treatment and lower QoL (24-26). Recently, an analysis of 39 studies revealed that higher resilience scores were associated with lower anxiety and depression scores, and higher QoL scores ; thus, improving resilience in cancer patients is important for maintaining their mental health and QoL (7). Recently, a growing number of studies (7, 10-19) (Table) have linked higher resilience in cancer patients to better cancer adjustment, better mental health and treatment outcomes, and higher QoL. Interestingly, despite the high degree of suffering associated with cancer diagnosis and treatment, many patients show high levels of resilience (27), which can promote effective cancer adaptation (5). Gheshlagh *et al*. concluded that the more severe the impact of the disease, the higher the resilience of patients and the higher their efforts to mitigate the negative effects of the

Table. Clinical significance of resilience in cancer patients

Measure	Samples	Research conclusion	Reference
CD-RISC25	289 lung cancer patients	Patients with higher resilience and social support had less psychological anxiety and depression, and resilience was a mediator of social support influencing anxiety and depression.	Hu TJ *et al*. 2018 (10)
	260 breast cancer patients	Resilience is significantly associated with anxiety, depression, and PTG. Professional psychological interventions should be used to facilitate the mediating role of resilience in reducing anxiety and depression and promoting PTG.	Li LB *et al*. 2020 (11)
	98 head and neck cancer patients	Resilience is correlated with QoL, and enhancing patients' resilience may help to improve their QoL.	Tamura S *et al*. 2021 (7)
	517 breast cancer patients	High levels of psychological resilience are significantly associated with high levels of QoL. Assessment of psychological resilience at the time of breast cancer diagnosis may help in the early identification of women who need more intense psychosocial support.	Mohlin Å *et al*. 2020 (12)
	121 colorectal cancer patients	Resilience has a negative effect on anxiety and depression and a positive effect on QoL.	Tamura S *et al*. 2021 (13)
	209 ovarian cancer patients	The FoP in ovarian patients is negatively correlated with resilience and QoL. Resilience was positively correlated with QoL.	Gu Z-H *et al*. 2020 (14)
	114 breast cancer patients	As resilience increases, the patient's depression rate decreases, thus improving the patient's mental health.	Tadayon M *et al*. 2018 (15)
	418 breast cancer patients	Resilience is positively correlated with QoL even one year after diagnosis, suggesting that resilience is an important factor in maintaining QoL.	Mohlin A *et al*. 2021 (16)
CD-RISC10	1326 cancer patients	Patients with higher levels of anxiety reported higher levels of stress as well as lower levels of resilience, accompanied by increased severity of symptoms.	Oppegaard K *et al*. 2021 (17)
	287 advanced lung cancer patients and their caregivers	Positive family functioning can promote resilience in patients and their caregivers. Increased resilience can directly improve caregivers' quality of life and indirectly promote patients' QoL.	Wang H *et al*. 2021 (18)
RS by Wagnild and Young	250 brain tumor patients	Resilience has a protective effect on the mental health of brain tumor patients.	Zahid N *et al*. 2021 (19)

Abbreviations : CD-RISC25 : 25-item Connor-Davidson resilience scale ; CD-RISC10 : 10-item Connor-Davidson resilience scale ; RS : resilience scale ; PTG : post-traumatic growth ; QoL : quality of life ; FoP : fear of progression.

disease (28). However, it is important to note that various factors influence the resilience of cancer patients, which leads to different psychological and treatment-related outcomes (5). Kalisch *et al*. proposed that resilience is the result of adaptation to stress and is considered trainable and changeable (29). These studies suggest that we should actively explore and identify the factors that influence resilience in cancer care. Thereby, maintaining and developing resilience provide positive support to improve QoL in cancer patients (5-7).

PROMOTING PATIENT QOL BY ENHANCING RESILIENCE IN ONCOLOGY NURSING

Many studies have evidenced that cancer patients can benefit from resilience-enhancing interventions and promoting resilience by helping psychological growth should be an important part of oncology nursing (5, 30). Combining the factors influencing resilience and the reality of cancer care, we proposed that measures should be taken in the following areas (schematic in Figure).

Symptom-specific basic and specialized nursing support

Medical treatment such as surgery or chemotherapy can cause a variety of somatic symptoms in cancer patients, and evidence shows that the more physical and severe the symptoms, the lower the resilience (7, 24, 25, 31). Additionally, self-efficacy was reported to be positively correlated with resilience (32). When physical symptoms are extremely severe, self-efficacy and positive coping ability are reduced, indirectly leading to low resilience (32). Therefore, basic and specialized nursing care is required to improve somatic symptoms in cancer patients. Nurses need to be more aware of this and integrate it into all the stages of care (33). In a study involving 128 patients with esophageal cancer at three-month postoperative follow-up, Guo *et al*. suggested that nurses should focus on patient symptom management after surgery, pay attention to the impact of patient resilience on symptom clusters, and provide patients to implement individualized care, thereby improving their QoL (34). This requires nurses to give basic and specialized care to help patients manage physical symptoms and treatment-induced adverse events, enhance treatment adherence, and prevent a decline in resilience (7). Additionally, certain surgeries or physical injuries caused by cancer treatment, such as mastectomies, amputations, and surgeries involving the reproductive system, can lead to changes in body image and dramatic decreases in social adjustment, (35, 36). It becomes essential, then, to ensure symptom-specific basic and specialized nursing support, along with systematic psychological intervention care to exert a protective effect on resilience (37).

Supportive care focus on individuality

According to Eicher, intrapersonal characteristics and attributes such as self-efficacy, hope, optimism, and coping impact resilience ; hence, these elements must be considered when identifying ways to promote resilience in cancer patients (9). According to a study on 382 postoperative patients with non-small cell lung cancer, self-efficacy was the most important variable influencing patients' postoperative psychological resilience. Moreover, the implementation of a series of targeted interventions is expected to improve patients' postoperative QoL by enhancing their self-efficacy and psychological resilience (38). Ludolph *et al*. analyzed 57 trials with 2,912 patients and suggested that resilience interventions based on positive psychology, supportive group therapy, and behavioral therapy have achieved substantial beneficial effects. Cancer patients who are interested and motivated should be provided resilience-promoting therapies, which should be administered concurrently with somatic treatment and prolonged beyond 12 sessions, wherever possible

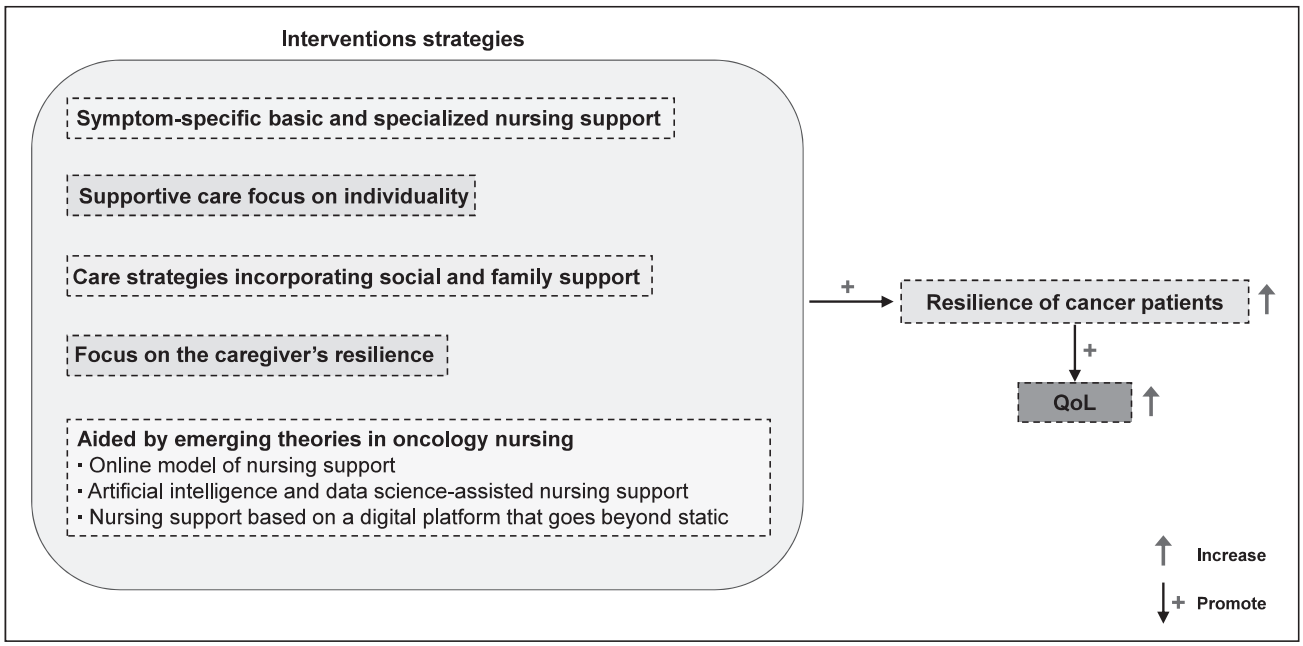

Fig. Strategies for developing resilience interventions in oncology nursing to promote patients' QoL. Oncology nurses should ensure symptom-specific basic and specialized nursing support, pay attention to supportive care which is focused on individuality. Adopting care strategies incorporating social and family support and focusing on the caregiver's own resilience are very important concepts. Moreover, importance should be attached to enriching this research topic by incorporating emerging nursing theories. All these strategies may be helpful to develop resilience and finally promote the QoL of patients.

(30). Consequently, focused treatments in clinical care should be aimed at increasing resilience in cancer patients, such as developing particular baseline traits or enhancing their coping and adaptation methods. All of these, in addition to standard cancer treatment methods, may assist patients to gain inner strength and vitality, as well as address personal psychological demands, enhancing their QoL (39-41).

As the population ages, older adults with cancer are becoming a topic of increasing concern. Hoogland *et al*. demonstrated that there are positive psychological changes and better adaptive coping with cancer in older adults, as well as high levels of emotional resilience (42). This suggests that, while care delivery needs to be modified to accommodate the needs of older cancer patients, research on their coping strategies and worldview may inform the development of support interventions on resilience in younger oncology patients (42). In addition to age, gender is also a factor that needs attention in supportive care. Studies have shown that women are more likely to experience anxiety and depressive symptoms in highly stressful situations such as a cancer diagnosis (43). In the case of breast cancer, stress-related neuro-immune-endocrine mechanisms contribute to cancer pathophysiology, and stress-reducing nursing psychological interventions should be complementary to cancer care (41). These are important issues for nurses in oncology clinical care.

Care strategies incorporating social and family support

Hofman *et al*. reviewed 22 published articles and found that increasing social support for lung cancer patients was one of the most important factors in improving QoL. Social support from healthcare professionals has a significant impact on patients' fighting spirit and attention should be paid to the provision of this care (44). In a study involving 103 patients who underwent surgery for colorectal cancer, social support from family and healthcare professionals played an important role in improving their resilience (45). Öcalan *et al*. studied cancer survivors' rumination, exhaustion, and psychological resilience. The findings show that intrusive rumination and purposeful ruminating have different mediation effects on psychological resilience. Oncology nurses, as key providers of psychosocial care, should be aware of the many forms and repercussions of rumination to help patients develop psychological resilience (46). Overall, during the long period of cancer treatment, caregivers should support patients according to their unique social needs. This will help patients maintain a positive view of their health (47), which will eventually promote QoL by enhancing resilience.

Focus on the caregiver's resilience

Cancer may bring discomfort and major obstacles for caregivers and family members as well (48). Spouses or partners, who are frequently the primary caregivers for cancer patients, are more vulnerable to the strain of caring. Previous research has indicated that this stress and pressure on family caregivers may increase their risk of morbidity and death (49). Sun *et al*. focused on the resilience of spouses as cancer caregivers, and reviewed the evaluation methods and related influencing factors. The level of resilience has direct and indirect effects on caregiver burden (50). However, current research on the resilience of family caregivers of cancer patients is inadequate, and further investigation is required to explore caregiver support needs to develop strategies for improving coping and resilience in this population (51). Additionally, the resilience of professional caregivers is also a matter of concern. Kelley *et al*. studied 218 lung cancer and 222 colorectal cancer patients and identified that social support improved the health of both patients and their nurses (52). Their findings implied that greater social support, particularly emotional and informational assistance, might reduce patients' risky behavior (44, 52). Opsomer *et al*. studied the caregivers of patients diagnosed with advanced cancer and proposed that Bonanno's framework, "temporal elements of resilience" is the most appropriate framework to assess their resilience. It should be used for early identification of caregivers at risk of mental illnesses, so that novel preventative programs and treatment choices may be developed (53). Therefore, focusing on caregivers' resilience is becoming an increasingly important aspect in this field of study.

AIDED BY EMERGING THEORIES IN ONCOLOGY NURSING

Online model of nursing support

Use of online support techniques was especially beneficial and desirable during the COVID-19 pandemic when medical resources were extremely scarce. Sui *et al*. (54) conducted a study in which patients with non-small cell lung cancer, who underwent surgery, used a WeChat app-based education and rehabilitation program (WERP) for 12 months and showed significant improvements in QoL and well-being. The WERP includes disease-related health education, rehabilitation exercise instructions, daily activity supervision, and psychological support. Similar online care support would be beneficial for patients' resilience.

Artificial intelligence and data science-assisted nursing support

Parimbelli *et al*. reviewed computer systems that use artificial intelligence and data science to monitor and support cancer patients. This is important because, first, it can help detect health status through the collection, integration, and analysis of data in the patient's home environment. Second, an open cancer modern decision support system with continuous revision through practice feedback will build predictive models to achieve better tailoring of behavioral interventions for specific groups of cancer patients (55). Ultimately, this holistic care support will help improve the QoL of patients.

Nursing support based on a digital platform that goes beyond static

Recently, Tevaarwerk *et al*. (56) proposed the concept of using engineered systems models to build dynamic management systems to achieve universal, real-time participation of clinicians, survivors, and caregivers to improve the quality of care and clinical efficiency. The rising number of cancer survivors, long-term follow-up treatment, and fragmentation of care is currently posing challenges to oncology healthcare delivery. Adoption of a digital care platform can increase information availability, facilitating cancer patients' self-efficacy and improving care quality (57).

CONCLUSION

Overall, oncology nurses should provide more individualized and comprehensive support to patients, and actively focus on caregivers' resilience in clinical practice. This will maintain and develop resilience in cancer patients, improving their QoL. Achieving a more accurate assessment of resilience in cancer patients and analyzing the factors influencing resilience are likely hot topics for future research. Additionally, attention should be paid to enriching this research topic by incorporating emerging nursing theories.

CONFLICTING INTERESTS

The authors declare no conflicts of interest.

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